In the Claims:

Claims 1-12 canceled.

Claim 13 (new) A liquid distributor for two liquid phases to be distributed uniformly into a plurality of tubes of an upright tube-bundle reactor for carrying out chemical reactions, wherein the tubes are retained at the top and bottom by tubesheets and closed against the outside of the tube, and wherein a distribution chamber is arranged above the upper tubesheet, which chamber contains feed pipes for two different liquids and at least one gas phase, wherein

- a first liquid distribution system is arranged above the tubesheet or on it,
  - which system is connected to at least one outer feed device, and contains a weir, installed outside the tubed area, with openings at the bottom and a plurality of inlet sleeves,
  - wherein one inlet sleeve is assigned at the top to each of the tubes in the tube bundle, the inlet sleeves are of tubular design and are vertically aligned, and the said sleeves have at least one lateral and one further opening located above the tubesheet and are open at the bottom facing each assigned tube in the tube bundle, and
- a second liquid distribution system is arranged above the first liquid distribution system,
  - which system is connected to at least one other outer feed device and contains one upper and one lower distribution tray,
  - wherein the lower distribution tray contains a plurality of openings which are arranged flush above the inlet sleeves of the first liquid distribution system, and exhibits at least one device for setting a uniform liquid level above the openings,

- wherein the upper distribution tray is connected to the feed device for liquid, and contains a plurality of overflow weirs or plate holes from which the liquid is able to discharge into the lower distribution tray, and wherein each of the overflow weirs is assigned to a plurality of openings in the lower distribution tray.

Claim 14 (new) The liquid distributor according to Claim 13, wherein the inlet sleeves exhibit at least one lower, smaller lateral hole, and at least one higher, larger lateral hole.

Claim 15 (new) The liquid distributor according to Claim 13, wherein the inlet sleeves exhibit at least one lateral notch through which liquid is able to flow from the tubesheet into the inside of the tube.

Claim 16 (new) The liquid distributor according to Claim 15, wherein wire-shaped flow aids are provided in the at least one lateral notch of the inlet sleeves, down which such aids the liquid is able to run on the inside of the inlet sleeves.

Claim 17 (new) The liquid distributor according to Claim 13, wherein the upper liquid distribution system rests on the inlet sleeves of the lower liquid distribution system.

Claim 18 (new) The liquid distributor according to Claim 13, wherein it is dismountable and of modular structure.

Claim 19 (new) The liquid distributor according to Claim 18, wherein the individual parts can be plugged in.

Claim 20 (new) The liquid distributor according to Claim 13, wherein the overflow weirs of the upper distribution tray of the second liquid distribution system exhibit a serrated shape on its upper edge or lower edge, or both.

Claim 21 (new) The liquid distributor according to Claim 13, wherein the lower distribution tray is provided with overflow weirs or plate holes, each of which exhibit three outlets offset by 120 degrees, which outlets are each assigned flush to an inlet sleeve.

Claim 22 (new) The liquid distributor according to Claim 13, wherein the lower distribution tray is provided with discharge flow aids at its openings.

Claim 23 (new) The liquid distributor according to Claim 13, wherein the inlet sleeves are positively connected to the tubesheet and the tubes.

Claim 24 (new) The liquid distributor according to Claim 13, wherein the inlet sleeves are rolled into the tube ends.

Claim 25 (new) A process for two liquid phases to be uniformly distributed into a plurality of tubes of an upright tube-bundle reactor, the liquids being two liquids which cannot be mixed and which, because of their non-miscibility, cannot be pre-mixed, wherein the liquids are introduced separately into the individual tubes of the tube bundle.

Claim 26 (new) The process according to Claim 13, wherein not only the two liquids but also a gas flow is fed into the individual tubes of the tube bundle.

Claim 27 (new) A method of utilizing the liquid distributor according to Claim 13, comprising uniformly distributing two immiscible liquids into a plurality of tubes of an upright tube-bundle reactor by separately introducing the liquids into the individual tubes of the tube bundle.